PowerPoint – Introduction

Slide 1:

* We did our presentation on phantom load.
* We chose this topic because we wanted to know how much electricity we waste and thought that it would make an eye-opening presentation.
* Over the course of this project we investigated the idea of phantom load
* We did research and also tested devices in our houses for phantom load
* In order for you to learn about phantom load we should review some vocabulary

Slide 2:

* First word that we are going to talk about is phantom load
* Can anyone define phantom load for me?
* (Yes/No), it is the power used by something while turned off
* Not all devices have phantom load
* Phantom load is most commonly found with devices that have lights on them that never turn off
* Standby power is another word for phantom load

Slide 3:

* Next two words that we will discuss are watt and watt hour
* Can anyone remember what a watt is?
* (Yes/No), it is a unit to measure power that is equal to one joule per second
* Now, does anyone remember who the watt is named after?
* (Yes/No), the watt is named after James watt for his contribution toward the development of the steam engine
* You have probably heard of this word because of light bulbs which are labeled by watts
* A 100 watt light bulb for example uses 100 joules of energy per second

Slide 4:

* Next word that we are going to talk about is watt hour
* This term is most likely less familiar to you and harder to remember so we’ll give definition
* A watt hour is unit of energy equal to 3600 joules or one watt working for an hour
* You might be wondering what the difference is between watt and watt hour
* One difference is that watt is a unit of power and watt hour is a unit of energy
* Another way to think of it is as a faucet
* Watt is the rate at which water comes out and watt hour is how much total water comes out

Slide 5:

* Now we are going to define joule
* Can anyone tell me what the word joule means?
* (Yes/No), a joule is a unit of energy that is equal to the force of one Newton through the distance of one meter
* We used this word in the definitions for watt and watt hour

Slide 6:

* Next we will discuss what a watt meter is
* A watt meter is an instrument used to measure electricity in watts
* We used one to test devices for phantom load
* The one we used is called Watts Up? Pro
* (Pass around watt meter) We are now going to pass around the watt meter
* We will talk more about it later

Slide 7:

* Next word we will define is energy
* Can anyone remember what the definition for energy is?
* (Yes/No), energy is the ability to do work
* Comes in many forms such as electrical, solar, potential
* For purpose of phantom load it is used mostly for electrical energy
* Electrical energy is energy created by moving electrons

Slide 8:

* Now we are moving on to energy efficiency
* Also a term you should know
* Energy efficiency is the amount of useful energy available after a conversion occurs
* Later we’ll talk about energy star appliances which are appliances that are more efficient
* This basically means they use less energy than regular appliances to get the same job done

Slide 9:

* Last word = energy conversion
* Does anyone know what the term energy conversion means?
* (Yes/No), energy conversion is when energy is changed from one form to another
* Example of this is solar panels such as those at the MEAD which convert solar energy to electrical

Transition:

* Now that you all have been introduced to phantom load we are going to do a Prezi on awareness and prevention of phantom load.

Prezi - Awareness and Prevention

Slide 1:

* First we are going to talk about awareness of phantom load
* We’ll give a very brief history, some interesting statistics, and the amounts of phantom load that some devices use

Slide 2:

* Relatively new idea to us humans as electricity isn’t super old yet
* Until early 20th century, it wasn’t major issue
* 1933, Eje Sandberg coined phrase “leaking electricity”
* As time has progressed we have become more aware of phantom load and its magnitude

Slide 3:

* This has brought on one watt initiative
* One watt initiative is the energy-saving ambition by the IEA (International Energy Agency)
* Its goal is to decrease phantom load to no more than one watt per device in 2010 and one half of a watt by 2013

Slide 4:

* Next we are going to give a few intriguing statistics having to do with phantom load
* The first one is that an estimated 6% of the US’s entire electricity consumption is phantom load
* As you know, US uses a large amount of electricity which means we waste a significant amount through phantom load
* Since renewable energy makes up about 7% of energy we use, phantom load uses up almost all renewable energy in the US
* Can you imagine what we could do with this electricity or how much money we waste through phantom load?
* Since 6% of electricity in the US is phantom load, around 6% of electricity in homes is phantom load
* Average electricity bill for an American is $95.66
* This means that average American household wastes $68.87 on phantom load every year
* Wouldn’t it be nice to have that money? Later we will tell you how to get some of it back

Slide 5:

* The next statistic is that the US’s phantom load is equal to the electricity used in Greece, Peru, & Vietnam
* Another interesting fact is that the phantom loads of CD players in the US in one year could power the Las Vegas strip for six months
* This just goes to prove the magnitude of phantom load

Slide 6:

* According to one of our sources, 75% of power that a device uses is used while that device is off
* As much of electricity is produced by coal burning plants, phantom load is a contributor to global warming
* In fact, 1% of carbon dioxide emissions come from phantom load

Slide 7:

* Next we are going to give the phantom load of some devices to give you an idea of how much money you could be saving if it weren’t for phantom load
* Devices that have phantom load are referred to as “vampires”
* An example of a vampire is a DVD player
* The following numbers are according to one of our sources and are for a month long period of time
* First device we will talk about is an Xbox 360 which has a phantom load of $0.13

Slide 8:

* Another device is an LCD TV which wastes $0.20 per month through phantom load
* Since the average American household has about three televisions, which happens to be more than people, the average American wastes about $0.60 if they are all LCD

Slide 9:

* Plasma TVs however use $0.40 every month through phantom load
* This means that average American household wastes $1.20 per month if they are all plasma

Slide 10:

* Last device is a coffee pot which has a phantom load of $0.40 per month
* This is surprisingly the same amount that a plasma TV uses

Slide 11:

* Now that we have given you the amounts of phantom load that a few devices use we are going to give you a few tips on how to decrease and prevent phantom load
* This cannot only decrease your electricity bill but slow global warming down ever so slightly

Slide 12:

* First idea that we have to prevent phantom load is the obvious one – to unplug devices
* When you’re not using something why should you keep it plugged in and pay for it?
* Most effective way of preventing phantom load
* This is because absolutely no phantom load can occur since no power is coming to the device
* Although most effective, it can be a little impractical because it takes so much time to unplug everything in your house and to plug it in again every time you use it
* That is why we have a few other ways that you can decrease your phantom load

Slide 13:

* Another way you can prevent phantom load in your home is to use power strips
* Power strips are very easy to turn off – much easier than unplugging everything
* One tip with power strips is to turn them off right before you go to bed so you don’t pay for electricity you’re not using

Slide 14:

* A third way to reduce phantom load is to buy more energy efficient items
* Can someone repeat what energy efficiency is?
* (Yes/No), energy efficiency is the amount of useful energy available after a conversion occurs
* Energy star appliances are very energy efficient appliances
* They use 20-50% less energy than regular ones use
* These are usually labeled so next time you buy something you might want to consider buying an energy star appliance
* Although it may cost more, it could be worth it in the end

Slide 15:

* Replacing devices with other devices can also reduce phantom load
* For one, older devices tend to have higher phantom load than newer ones
* This is in part thanks to one watt initiative

Slide 16:

* As discussed before, plasma TVs have twice the amount of phantom load than LCD TVs
* Switching your televisions can save you money in the long run

Slide 17:

* Battery chargers generally have large phantom loads
* Just by unplugging them and any other chargers when not in use can definitely save you money

Slide 18:

* Devices that are cordless generally have higher phantom loads than regular ones
* So, changing your cordless phones to ones with cords can decrease the amount of money that you spend on phantom load

Transition:

* Now we are going to talk about how we tested the devices we tested and share our results. For this part of the presentation we made a podcast.  
    
  Podcast – How We Tested & Results

Hello class! We are here to teach you about how we tested devices for phantom load and talk about our results. First off we are going to show you how we measured devices for phantom load. (Show watt meter diagram thing) First we plugged the watt meter into the wall and the device we measured into the watt meter. A blue cord then ran from the watt meter into a computer. The watt meter recorded how many watts, watt hours, volts, and how much money the device used and then sent this information to the computer. A program on the computer call Logger Pro took this information and put it into graphs. We tested devices for a total of twelve hours having the devices on for the first six and then off for the second half. This showed us the contrast between the amount of power the device usually uses and the phantom load that it has. Now we are going to discuss our results from testing devices. The first thing we tested was a lamp. (Show graph) Here is the graph that shows the watts that the lamp used. For the first six hours the lamp used 100 watts of power because it had a 100 watt light bulb in it. This light bulb was an incandescent light bulb which is a light bulb that produces light by heating a filament wire to a high temperature until it glows. Then the number of watts dropped to zero which proves that this lamp has no phantom load. (Show graph) Here is a graph showing the money that the lamp used. In total the lamp used about $0.07 in electricity. We then tested a DVD player. While testing nothing was playing. (Show graph) Here is a graph showing the watts that the DVD player used. For the first six hours of being on, the DVD player used 9 watts and then dropped to 3 after the six hours. This means that the DVD player does in fact have phantom load. (Show graph) Here is a graph showing the money that the DVD player used. In total the DVD player used about $0.007, $0.006 in the first six hours and $0.001 in the last six. Now that we have tested a few devices we have some conclusions on devices that have phantom load. First off, if something has a light on it or some sort of display on it then it has a phantom load. If something has a remote it also has a phantom load because the receiver on the device always has to be on. This concludes our podcast!  
  
PowerPoint – Conclusion

Slide 11: We hope that you have enjoyed our presentation and remember a few of our tips on how to prevent phantom load. You can not only save yourself some money but help the environment. Thank you. Any questions?